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Question1: National C-FAR believes that many of the answers to this question are dependent on how well the research, extension and education title is structure so the programs can operate at levels that will yield basic and applied research and extension and education conducted to provide the sound science and research outcomes and tools needed to address these multiple challenges. Toward that end, National C-FAR references its response to Question #6.

Question2: National C-FAR believes that many of the answers to this question are dependent on how well the research, extension and education title is structure so the programs can operate at levels that will yield basic and applied research and extension and education conducted to provide the sound science and research outcomes and tools needed to address these multiple challenges. Toward that end, National C-FAR references its response to Question #6.

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Question5: National C-FAR believes that many of the answers to this question are dependent on how well the research, extension and education title is structure so the programs can operate at levels that will yield basic and applied research and extension and education conducted to provide the sound science and research outcomes and tools needed to address these multiple challenges. Toward that end, National C-FAR references its response to Question #6.

Question6: On behalf of the National Coalition for Food and Agricultural Research (National C-FAR), I am pleased to submit comments for the public record of the U.S. Department of Agriculture (USDA) Farm Bill Forum in strong support of enhanced public investment in food and agricultural research, extension and education (REE) as a vital component of the next farm bill.

While Question #6 appears to emphasize research as a tool to advance outcomes of expanded agricultural products and markets, National C-FAR respectfully submits that research, extension and education are equally important to meeting the full range of challenges and opportunities that the U.S. food and agricultural sector face in the coming years. Our

comments are offered in the context of the full range of needs and opportunities. Much of the answer to each of the other questions posed in the Forum—challenges facing new farmers and ranchers; the competitiveness of U.S. agriculture; the appropriateness and effectiveness of the distribution of farm program benefits; the achievement of conservation and environmental goals; and the enhancement of rural economic growth—will come not from those farm bill titles, but from the basic and applied research and extension and education conducted to provide the sound science and research outcomes and tools needed to address these multiple challenges.

National C-FAR serves as a forum and a unified voice in support of sustaining and increasing public investment at the national level in food and agricultural research, extension and education. National C-FAR is a nonprofit, nonpartisan, consensus-based and customer-led coalition established in 2001 that brings food, agriculture, nutrition, conservation and natural resource organizations together with the food and agriculture research and extension community. More information about National C-FAR is available at [www.ncfar.org](http://www.ncfar.org).

National C-FAR Supports Enhanced Funding Authorization for Research, Extension and Education Programs in the Next Farm Bill:  
A Sense of the Congress resolution endorsed by National C-FAR to double funding in food and agricultural research, extension and education within five years was incorporated into the 2002 Farm Bill that was enacted into law. However, this major commitment to expanded research has not yet materialized. At the four-year mark, the larger reality is the threat of funding cuts.

While difficult choices must be made during the annual budget and appropriations process in the current federal budget climate, reauthorization of the farm bill is the right time and opportunity for the Administration, the Congressional authorizing committees and the Congress to make a strong statement about the kinds of programs and the levels of funding needed to represent an adequate federal investment in food and agricultural research, extension and education. National C-FAR urges that program and funding authorizations for research, extension and education be augmented to the level merited and the maximum extent practicable in the next farm bill, as an important next step toward building the funding levels needed to meet pressing identified food and agricultural research, extension and education needs.

Program and funding authorizations in the next farm bill for all aspects of USDA's research, extension and education programs are important—including the Cooperative State, Research, Extension and Education Service (CSREES), the Agricultural Research Service (ARS) and the Economic Research Service (ERS). Both basic and applied research, with an integrated approach encompassing extension and education, yield essential outcomes that translate into tools and solutions for the U.S. food and fiber system.

The research, extension and education title of the farm bill represents the nation's signature federal investment in the future of the food and agricultural sector. The unparalleled success story in the food and agricultural system is a product in large part of past investments in food and agricultural research and extension. Program and funding authorizations in the next farm bill will make possible the basic and applied research and extension that will yield a bountiful harvest of sound science and tools. Farmers, ranchers and other sectors in the food and agriculture system will need these outcomes to address future

challenges.

#### Demonstrated Value of Public Investments in Food and Agricultural Research, Extension and Education:

Public and private investments in U.S. agricultural research and practical application of results have paid huge dividends to the United States and the world, especially in the latter part of the 20th century. However, these dividends are the result of past investments in agricultural research.

Food and agricultural research, extension and education to date have helped provide the United States with an agricultural system that consistently produces high quality, affordable food and natural fiber, while at the same time:

- ? Creating jobs and income. The food and agricultural sector and related industries provide over 20 million jobs, about 17 percent of U.S. jobs, and account for nearly \$1 trillion or 13 percent of GDP.

- ? Helping reduce the trade deficit. Agricultural exports average more than \$50 billion annually compared to \$38 billion of imports, contributing some \$12 billion to reducing the \$350 billion trade deficit in the nonagricultural sector.

- ? Providing many valuable aesthetic and environmental amenities to the public. The proximity to open space enhances the value of nearby residential property. Farmland is a natural wastewater treatment system. Unpaved land allows the recharge of the ground water that urban residents need. Farms are stopovers for migratory birds. Farmers are stewards for 65 percent of non-federal lands and provide habitat for 75 percent of wildlife.

- ? Sustaining important strategic resources. This nation's abundant food supply bolsters national security and eases world tension and turmoil. Science-based improvements in agriculture have saved over a billion people from starvation and countless millions more from the ravages of disease and malnutrition.

Publicly financed research, extension and education are necessary complements to private sector research, focusing in areas where the private sector does not have an incentive to invest, when 1) the pay-off is over a long term, 2) the potential market is more speculative, 3) the effort is during the pre-technology stage; and 4) where the benefits are widely diffused. Public research, extension and education help provide oversight and measure long-term progress. Public research, extension and education also act as a means to detect and resolve problems in an early stage, thus saving American taxpayer dollars in remedial and corrective actions.

By any standard, the contributions of publicly supported agricultural research, extension and education to advances in food production and productivity and the resulting public benefits are well documented. For example, an analysis by the International Food Policy Research Institute of 292 studies of the impacts of agricultural research and extension published since 1953 (Julian M. Austin, et al, A Meta-Analysis of Rates of Return to Agricultural Research, 2000) showed an average annual rate of return on public investments in agricultural research and extension of 81 percent!

If similar research dividends are to be realized in the future, then the nation must commit to a continuing investment that reflects the long-term benefits of food and agricultural research, extension and education.

National C-FAR Urges Enhanced Federal Funding for Food and Agricultural

#### Research, Extension and Education:

National C-FAR appreciates the longstanding support USDA has demonstrated through food and agricultural research, extension and education programs over the years that have helped the U.S. food and agricultural sector be a world leader and provide unprecedented value to U.S. citizens, and indeed the world community.

National C-FAR is deeply concerned that shortfalls in funding in recent years for food and agricultural research, extension and education jeopardize the food and agricultural community's continued ability to maintain its leadership role and more importantly respond to the multiple, demanding challenges that lie ahead. Federal funding for food and agricultural research, extension and education has been flat for over 20 years, while support for other federal research has increased substantially. Public funding of agricultural research in the rest of the world during the same time period has reportedly increased at a nearly 30 percent faster pace.

Reduced public investment in food and agricultural research, extension and education may well be a result of a view that the U.S. food and agricultural system is an unprecedented success story. However, societal demands and expectations placed upon the food and agricultural system are ever-changing and growing. Simply stated, federal funding has not kept pace with identified priority needs.

National C-FAR believes it is imperative to lay the groundwork now to respond to the many challenges and promising opportunities ahead through federal policies and programs needed to promote the long-term health and vitality of food and agriculture for the benefit of both consumers and producers. Stronger public investment in food and agricultural research, extension and education is essential in producing research outcomes needed to help bring about beneficial and timely solutions to multiple challenges. Multiple examples, such as those listed below, serve to illustrate current and future needs that arguably merit enhanced public investment in research, extension and education so that the food and agricultural system can respond to these challenges on a sustainable basis:

? Strengthened bio-security is a pressing national priority. There is a compelling need for improved bio-security and bio-safety tools and policies to protect against bio-terrorism and dreaded problems such as foot-and-mouth and "mad cow" diseases and other exotic plant and animal pests, and protection of range lands from invasive species.

? Food-linked health costs are high. Some \$100 billion of annual U.S. health costs are linked to poor diets, obesity, food borne pathogens and allergens. Opportunities exist to create healthier diets through fortification and enrichment.

? Research, extension and education are key to providing to solutions to environmental and conservation challenges related to global warming, limited water resources, enhanced wildlife habitat, and competing demands for land and other agricultural resources.

? There was considerable debate during the last farm bill reauthorization about how expanded food and agricultural research, extension and education could enhance farm income and rural revitalization by improving competitiveness and value-added opportunities.

? Energy costs are escalating, dependence on petroleum imports is growing and concerns about greenhouse gases are rising. Research, extension and education can enhance agriculture's ability to provide renewable sources of energy and cleaner burning fuels, sequester carbon, and provide other environmental benefits to help address these

challenges, and indeed generate value-added income for producers and stimulate rural economic development.

? Population and income growth are expanding the world demand for food and natural fiber and improved diets. World food demand is projected to double in 25 years. Most of this growth will occur in the developing nations where yields are low, land is scarce, and diets are inadequate. Without a vigorous response, demand will only be met at a great global ecological cost.

? Regardless of one's views about biotechnology and genetic resources, an effective publicly funded research role is needed for oversight and to ensure public benefits.

Translational education (extension) is a vital link connecting the research community to those who need and use research outcomes. The extension and education system helps translate basic and applied research outcomes into practical applications and more timely implementation by the end user community, thus helping to realize positive economic, environmental, health, food security and a host of other benefits in the food and agricultural system, and for the consuming public. The USDA's National Research Initiative has made significant progress in recognizing this role, through funding of projects that undertake an integrated research and extension approach. National C-FAR strongly supports funding for extension and education.

Finally, there is a continuing need to build the human capacity of expertise to do quality food and agricultural research, extension and education, and to implement research outcomes in the field and laboratory. The food and agricultural sciences face a daunting task of supplying the nation with the next generation of scientists and educators. If these basic human resource needs are not met, then the nation will face a shortage of trained and qualified individuals.

Public investment in food and agricultural research, extension and education today and in the future must simultaneously satisfy needs for food quality and quantity, resource preservation, producer profitability and social acceptability. National C-FAR urges that the next farm bill augment authorizations for programs and funding for research, extension and education be augm